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A NEW GALL MOTH, AND NOTES ON LARVÆ OF OTHER GALL MOTHS.

BY D. S. KELLICOTT, BUFFALO, N. Y.

There have been described, thus far, three N. American moths whose larvæ produce galls, or more or less decided enlargements of the stems of their food-plant. They are, first, *Gelechia gallæsolidaginis*, described by Riley, with cuts, in the First Mo. Rept. at page 173; accompanying the description is an account of six parasites. Second, *Walshia amorphylla*, described by Clemens in Proc. Ent. Soc. Phil., vol. ii., page 419; also an account of larva habits, etc., with cuts, is given in the Second Mo. Rept. at page 132. Third, *Paedisca (Euryptychia) saligneana*, described by Clemens in Proc. Ent. Soc. Phil., vol. v., page 141; an account of it also occurs in the Second Mo. Rept., page 134.

I have found *G. gallæsolidaginis* common at different places in Michigan and about Buffalo, N. Y. However, its enemies are so numerous of late at Buffalo that not above one-half of the galls escape, so the insect is much less common than it was a few years since. I have but few facts to add to those given in the excellent monograph of Prof. Riley cited. I find that the galls are *not* always on dwarfed specimens of the plant, and, further, the larva does *not* bore entirely through the stem and then make the plug, but cuts away the walls and inner bark, leaving the epidermis which dries and falls away after the plug is completed. These galls are of frequent occurrence on plants much branched and of full altitude; they are lower on the stem than those of the fly *Trypeta solidaginis*, or of the moth *Paedisca saligneana*, and are therefore less conspicuous. On the other hand, they are more readily found than the large, oblong gall made near the ground on the golden-rod by a fly whose name is unknown to me.

Paedisca saligneana, the mis-named gall moth, is a very common insect in the vicinity of Buffalo. The habits of the larva have not, I believe, been published. Riley in the Second Mo. Report gives reasons for concluding that it is an intruder on *G. galliesolidaginis*. It certainly is not.

The moth begins to appear about June 20th. In a few days the minute larvae may be found penetrating the stem just above the axil of a leaf near the top of the plant; sometimes they occur in a branch. The larva cuts right across the stem and soon clears out everything but the bark. The point attacked is soon surrounded by an enlarged ring, which is an effort of the plant to strengthen its weakened stem by adding new material to the outside layers; the ring continues to increase in diameter and in length upwards. The average mature gall is two and one-half times the diameter of the stem in thickness, and four times as long as broad. During the growth of the gall there is a "window," usually near the bottom, consisting of a tubercle pierced with a round orifice which is temporarily closed by a web membrane. The tubercle is probably at the point where the larva entered the stem. The purpose of this gateway seems to be for ventilation and for ejection from time to time of the castings which accumulate at the bottom of the cavity.

The larva during the summer is dusky, during the winter dull white; it attains a length of .56 to .6 of an inch; head and cervical shield dark brown or black; on the segments are large piliferous spots arranged as follows: on first segment one in front and below the spiracle, the second has a transverse row of six, the third to twelfth each has the transverse row of six and two on the dorsum behind the row.

In the autumn, when full fed, it spins a thin lining to its house and remains all winter at the lower extremity; when spring quickens it ascends, bores near the top a round passage-way, leaving, however, an external scale of bark after the manner of *T. solidaginis*. It then spins a close white cocoon reaching up to the point of final exit. It remains a pupa about three weeks. When the time has come for the final change, the pupa, assisted by the spines on the abdominal rings, ascends the silken-lined gallery, and with the prow on its front, breaks up the door, protrudes two-thirds its length, where it remains until the moth escapes, leaving the pupa-skin to tell the tale.

The pupa is rather slender, curved like a *Cossus* chrysalis, brown, teeth on abdominal rings prominent; there is on the front a strong beak, which serves a good turn when the insect escapes.

I have met only one parasite, an ichneumon fly. It is not abundant.*

There is still another moth known to me whose habits are very similar to those of *Gelechia gallæsolidaginis* Riley. I present its history and description, and propose to call it *Gelechia gallæasterella*.

Larva—Length .4 of an inch. Color tawny, head black, cervical and anal shield composed of ragged brown patches, true legs dark, terminal joint light. Piliferous spots mostly small and round, arranged thus: first segment has one below and one in front of the spiracle, second and third one above the foot and a triangle above it, fourth to eleventh two below the spiracle and a triangle above, the bases of which make a row on the sides of the dorsum.

Pupa—Length .33 of an inch. Brown, head and thorax quite dark.

The head and eyes are rather more prominent than the pupa of *gallæsolidaginis*; it is also stouter.



Fig. 1. (x2)

Imago—Length .32, expanse .8 of an inch (average of five). Fore wings white, speckled with brown and black; there is a brown patch occupying the costal half of the middle third; it is darkest towards the base; bordering the hind margin of the patch is a distinct (under a lens) dark brown line which terminates in a hook; just behind the middle of the patch are two short, parallel, black dashes; beyond these, in line with the apex, is a short, black, irregular mark. Cilia touched with brown, the tips quite dark. Hind wings gray; cilia light with a tinge of yellow; tips dark. Palpi white with brown scales on outside of second joint; terminal joint black nearly half its length, extreme tip white. Antennae annulated with brown and white. Head white, thorax white more or less streaked with brown. Abdomen gray peppered with dark scales below, the first three segments yellow above.

Described from several bred specimens.

* There is a fourth moth which I have found at different places in Ont. and New York, whose larva produces a gall on the Willow. Its habits are almost identical with those of *saligneana*. I had its history in manuscript to accompany this paper, but when about to send it to the publisher, Prof. C. H. Fernald informed me that Prof. C. V. Riley also has it in manuscript. It will finally be published as *Grapholitha gallæsaliciana*.

Food plant, *Aster corymbosus*, on the stems of which it makes an elliptical, hollow gall, 1.25 inches in length, .48 of an inch in diameter, the diameter of the plug (fig. 2) being .08 of an inch.



Fig. 2. Nat. Size.

Twelve galls collected August 3rd contained four without parasites, while eight had an elliptical, dark cocoon suspended in the centre.

The galls are found a few inches above the ground, the terminal bud developing very little after the larva begins operations. May 22nd I found full-sized galls, the inhabiting larva at the time being quite small. July 1st I discovered the first pupa which disclosed a moth, August 1st. The larva just previous to its change makes a perfectly round hole (leaving a thin scale of the epidermis) through the thin walls near the top of its house, which it fills with a closely-fitting plug of silk; on the outer border of this plug is a flange which prevents its displacement inwards, but allows the escaping moth to readily push it outwards. It then lines the interior with silk and soon changes to a chrysalis.

NOTES ON PAPILIO CRESPHONTES AND CATOCALÆ.

BY G. H. FRENCH, CARBONDALE, ILL.

This season I have seen some peculiarities in rearing *Papilio cressphontes* that seem worth noting. I had at one time four of the larvæ in a cage of three different broods. The two older ones changed to chrysalids June 29th; one from the top of the box with the head down, number two

on the side with head up. Number three pupated July 11th, on the side of the box, head up; number four changed July 14th, suspended from the top the same as number one, all of them at an angle with the object to which they were attached, as is usual with *Papilios*. Numbers one and three produced imagines July 15th and 29th, or after a pupal period of fifteen and sixteen days respectively. August 4th, numbers two and three remained unhatched, having remained in this state thirty-six and twenty-four days, and they presented no indications of hatching. At this time I turned the box on its side, so that the heads were suspended downward instead of pointing upward. August 7th both produced perfect imagines.

Among my captures of *Catocala* this season in this vicinity, are *C. marmorata* Edw., *C. sappho* Streck., and *C. delilah* Streck., on white oak trees, the last June 29th, the second July 18th and 19th, and the first September 7th.

DESCRIPTIONS OF NEW ICHNEUMONIDÆ.

BY E. T. CRESSON, PHILADELPHIA, PA.

Genus MESOSTENUS Grav.

MESOSTENUS NUBILIPENNIS.—♀. Black; anterior orbits, lower part of cheeks, spot on middle of face, most of clypeus and labrum, spot on mandibles, annulus on antennæ, line on sides of collar, spot on each side of prothorax above, spot on disk of mesothorax, most of scutellum, dot on post-scutellum, tegulæ, spot beneath, spot on sides of pleura, spot on each side behind posterior wing, two elongate marks on metathorax behind covering the prominent, obtuse and transversely compressed tubercles, the four anterior coxæ, spot on posterior pair above, annulus at base of posterior tibiæ, extreme base and apex of the first joint of posterior tarsi, the second, third and fourth joints entirely, and the apical margin of segments 1-6 of abdomen, all white; front unarmed; thorax opaque; mesothorax confluent punctured; metathorax reticulated; wings hyaline, with a fuliginous cloud beneath stigma, areolet quadrate, closed; legs fulvous, extreme tips of posterior femora, their tibiæ except white annulus near

base, most of basal joint of their tarsi, and the apical joint, black; abdomen fusiform, rather shining, punctured, first segment considerably dilated at apex; ovipositor shorter than abdomen. Length .30 inch.

Hab.—Georgia (Morrison). Very much like *albomaculatus* Cress., but readily distinguished by the fuliginous cloud on anterior wings.

MESOSTENUS CANDIDUS.—♂. Black; orbits, face, clypeus, labrum, palpi, line on collar, spots on each side of prothorax above, two lines on mesothorax, scutellum, spot on post-scutellum, tegulæ, spot beneath, transverse line on sides of pleura, short line or spot beneath, curved spot behind each posterior wing, four spots on metathorax posteriorly, arranged in a transverse line, those on posterior face covering the short obtuse tubercles, four anterior coxæ and trochanters, base above and apex beneath of posterior coxæ, their tarsi except base and extreme tips, base and apex of first abdominal segment, and apical margin of second and following segments, all white; front unarmed; antennæ entirely black; mesothorax confluent punctured, without distinct impressed lines; metathorax reticulated; wings hyaline, with an æneous gloss, areolet open; legs fulvous, base beneath and apex above of posterior coxæ, extreme tips of their femora, their tibiæ except base, and extreme base and apex of their tarsi, black; abdomen slender, smooth and polished, first segment slightly dilated at tip, the second much narrowed to base. Length .30 inch.

Hab.—New York (Comstock).

MESOSTENUS FORTIS.—♀. Black; orbits, face except two spots above clypeus, clypeus, labrum, spot on mandibles, palpi, broad annulus on antennæ, line on collar, spot on each side of prothorax above, two lines on mesothorax, scutellum, spot on each side before on basal ridge, post-scutellum, tegulæ, dot beneath, longitudinal line on sides of pleura nearly confluent with a short curved line posteriorly and beneath, a line before each intermediate coxa, spot behind posterior wing, two spots on posterior face of metathorax covering the short blunt tubercles, a round spot on each flank, all the coxæ except tips of posterior pair above, four anterior trochanters, base of first abdominal segment, and narrow apical margin of all the segments above, all white; front unarmed; antennæ thickened beyond the middle; mesothorax without distinct impressed lines, sparsely punctured, longitudinally striated on disk; wings hyaline,

slightly dusky at tips, areolet open ; legs pale fulvous, tarsi paler, apex of posterior coxæ above black ; abdomen fusiform, shining, impunctured, first segment gradually dilated at tip ; ovipositor as long as the abdomen. Length .45 inch.

Hab.—New York (Comstock). This may prove to be the ♀ of *candidus*.

MESOSTENUS DILIGENS.—♀. Black ; orbits, very broad on cheeks beneath, face except medial spot, clypeus, base of mandibles, palpi, broad annulus on antennæ, collar, large spot on each side of prothorax above, two lines on mesothorax, scutellum, short oblique line on each side anteriorly, spot on post-scutellum, tegulæ, spot beneath, large spot behind each posterior wing, small one beneath, large oblique line on sides of pleura confluent with mark in front of intermediate coxæ, flanks of meta-thorax, two large sub-cuneiform marks on posterior face covering the short blunt tubercles, four anterior coxæ, first abdominal segment except black spot above near tip, spot on each basal corner of second segment, and broad apical margin of segments 2-6, all white ; front unarmed ; mesothorax with indistinct impressed lines ; wings hyaline, areolet open ; legs pale fulvous, tarsi paler, extreme tips dusky, posterior coxæ with white spot above ; abdomen fusiform, impunctured, first segment rather broadly dilated at tip ; ovipositor shorter than abdomen. Length .32 inch.

Hab.—Illinois (Lewis).

MESOSTENUS AUDAX.—♀. Black ; orbits, broad on cheeks beneath, sides and middle of face, most of clypeus, spot on mandibles, palpi, broad annulus on antennæ, line on collar, spot on each side of prothorax above, two short lines on disk of mesothorax, scutellum, spot on post-scutellum, tegulæ, spot beneath, oblique line on sides of pleura, smaller one immediately beneath, spot behind posterior wing, round spot on flanks of meta-thorax and two spots on posterior face covering the short blunt tubercles, all white or yellowish-white ; front unarmed ; mesothorax confluent punctured, with indistinct impressed lines ; metathorax rather coarsely reticulated ; wings hyaline, faintly yellowish, areolet open ; legs fulvous-yellow ; coxæ dull whitish, posterior pair tinged with fulvous, tarsi pale yellow, extreme tips dusky ; abdomen fusiform, impunctured, first segment and apical and lateral margins of remaining segments, dull whitish, sometimes more or less tinged with fulvous, especially the disk of post-petiole,

which is rather broadly dilated ; ovipositor shorter than the abdomen. Length .55 inch.

Hab.—Georgia (Ridings).

MESOSTENUS EXAPTUS.—♀. Black ; head and thorax marked exactly as in *audax* ; front unarmed ; mesothorax rather sparsely punctured, the two impressed lines distinct only in front ; metathorax reticulated, broad and flat on posterior face, sub-pubescent ; the tubercles short and obtuse ; antennæ robust toward tips ; wings hyaline, slightly dusky at tips, areolet open ; legs fulvous-yellow, anterior coxæ and trochanters whitish, tarsi yellowish ; abdomen fusiform, shining, impunctured, apical margin of the segments narrowly whitish, the first segment, and anterior margin of the yellowish band on second segment, fulvous, post-petiole rather broadly dilated ; ovipositor a little longer than the abdomen. Length .32 inch.

Hab.—Massachusetts (Ridings).

MESOSTENUS SAUNDERSI.—♀. Black, shining ; anterior orbits interrupted on sides of face, short line on posterior orbits, spot on clypeus, palpi, annulus on antennæ, spot on scutellum, dot behind, the short blunt tubercles on metathorax, tegulæ, and dot beneath, all yellowish-white ; mesothorax sparsely punctured, without impressed lines ; metathorax broad, reticulated, flat on posterior face ; sides of pleura longitudinally excavated, polished ; wings hyaline, faintly dusky at tips ; areolet open ; legs fulvous, posterior tibiæ dusky at tips, tarsi pale yellowish, fuscous at extreme tips ; abdomen fusiform, shining, impunctured ; the first segment entirely, and broad apical margin of second segment, fulvo-ferruginous, apical margin of remaining segments narrowly whitish, interrupted on disk of third segment ; post-petiole rather broadly dilated ; ovipositor as long as the abdomen. Length .40 inch.

Hab.—Canada West (Mr. Wm. Saunders). In this species the head and thorax are almost entirely black.

MESOSTENUS LATICINCTUS.—♀. Black, opaque ; broad orbits, face, clypeus, mandibles except tips, palpi, broad annulus on antennæ, collar, broad line on each side of prothorax above, spot on disk of mesothorax, scutellum, large mark on each side behind posterior wings, spot beneath them, flanks of metathorax, two elongate marks on posterior face covering the prominent transversely compressed obtuse tubercles, tegulæ, dot

beneath, broad oblique mark on sides of pleura, confluent behind with a large mark covering almost entirely the under surface, four anterior coxae and trochanters, and broad band at tip of abdominal segments, all white; front unarmed; antennae long, sub-robust at tip; mesothorax very finely and densely punctured, metathorax more coarsely so; wings sub-hyaline areolet open; legs fulvous-yellow, posterior coxae with base beneath and apex above black, posterior tarsi yellow, fuscous at extreme tips; abdomen sub-fusiform, the base and apex shining, post-petiole gradually dilated; ovipositor about half the length of the abdomen. Length .35 inch.

Hab.—Louisiana (Lewis).

MESOSTENUS PROMPTUS.—♂. Black; anterior orbits broad on sides of face, clypeus, mandibles except tips, palpi, spot on each side of prothorax above, lateral carinae at base of scutellum, tegulae, four anterior coxae and trochanters beneath, and posterior tarsi except base and apex, white; sometimes the middle of the face is more or less white; antennae entirely black, slender at tips; front unarmed; mesothorax shining, sparsely punctured, the two longitudinal lines deeply impressed, the middle lobe prominent; metathorax with lateral carinae of posterior face sharply defined, but without prominent tubercles or spines; wings sub-hyaline, areolet sub-quadrate, closed; femora fulvo-ferruginous, four anterior tibiae and tarsi yellow; abdomen slender, sub-compressed at tip, fulvo-ferruginous, the three or four apical segments black. Length .35 inch.

Hab.—Canada (Pettit); Illinois (Lewis).

MESOSTENUS AMERICANUS.—♀. Black, shining; short line on upper anterior orbits, palpi obscurely, annulus on antennae, interrupted beneath, obscure line on each side of scutellum at base, and dot on tegulae, whitish; front unarmed; mesothorax with well impressed lines; metathorax rather coarsely sculptured, with a smooth polished space on each side at base, sides of posterior face with sharply defined carina, but without prominent tubercles or spines; wings sub-hyaline, areolet longitudinally sub-quadrate, closed; four anterior legs, except coxae and trochanters, and posterior femora ferruginous, posterior tibiae and tarsi fuscous, joints 2-4 of the latter occasionally more or less pale; abdomen narrow fusiform, shining, impunctured, ferruginous, apical segments sometimes dusky, first segment long, slender, apical third rather suddenly dilated and sub-quadrate; ovipositor as long as the abdomen. Length .30-.33 inch.

Hab.—Maine (Fernald); Virginia (Ridings). This has much the appearance of a small specimen of *Cryptus americanus* Cress.

MESOSTENUS MACILENTUS.—♂. Black; orbits broad on cheeks, clypeus, base of mandibles, palpi, line on collar, upper margin of prothorax interrupted medially, spot on disk of mesothorax, scutellum, spot behind each posterior wing, line on flanks of metathorax, two spots at tip above, tegulae, spot beneath, two spots on sides of pleura, the anterior one the largest (both sometimes wanting), and spot at base of all the coxae, all white; front unarmed; antennae entirely black; mesothorax prominently trilobed; metathorax unarmed, pubescent; wings more or less dusky, areolet minutely quadrate, closed; legs long and slender, fulvo-ferruginous, black line at base of posterior femora within, their tibiae and tarsi more or less dusky, the second and third joints of the latter more or less pale; abdomen long, slender, ferruginous, apical segments sometimes obfuscated; first segment long, linear, stigmata prominent. Length .40 inch.

Hab.—Illinois, Louisiana (Lewis); Texas (Heiligbrodt).

NOTES ON SEVERAL SPECIES OF COLEOPTERA, WITH SOME ACCOUNT OF HABITS, ETC.

BY CHARLES DURY, AVONDALE, HAM. CO., OHIO.

Meglodacne Ulkei Crotch.

This pretty and interesting species, described by Mr. G. R. Crotch from a single specimen in the collection of Prof. Ulke, of Washington, D. C., who received it from Kentucky ten years ago, has remained unique in his collection until I found it, together with its larvæ and pupa.

Its food is fungus (*Polypora*) growing on logs. Its full-fed larvæ are $\frac{3}{8}$ inch long, rather slender, of light color, with the head brown; it eats out a cavity in the fungus, and there transforms to a pupa, which is of a pale flesh color. When the beetle first hatches from the pupa it is of a very light pinkish color, without any markings whatever. When it hardens it

acquires the black spots and the deep red color, with which its elytra are ornamented. A species of brown ant appears to prey on it, as I saw several larvæ and soft imagines being dragged away by these ants. The habits of the adult differ somewhat from *M. heros* and *fasciata*, in that *Meg. Ulkei* lives more inside the fungus and is less inclined to drop to the ground when the fungus is jarred.

Habitat—Campbell Co., Ky. ; July, 1878.

Bothrideres (Machlotes) exavatus Mels., and *gemminatus* Say.

These two species were found under and in the bark of an old elm tree, and were from the ground up 26 feet. They vary much in size. The larva constructs a very curious semi-transparent cocoon, flat on one side and convex on the other, and generally several joined together in a cluster. On emerging the imago is very light, but soon hardens and gets quite dark-brown colored.

Campbell Co., Ky.; July, 1878.

Omophron robustum Horn.

This species is described by Dr. Horn from specimens from Nova Scotia, and I believe Mr. Shwartz took a specimen or specimens on Lake Superior. In company with *Om. americanum* Dej. and *tessellatum* Say *robustum* was secured. While these species preferred sloping sandy banks near the water, many were taken on mud banks. On deluging the bank with water, it was amusing to see them rush out and up the bank.

Ham Co., Ohio ; July, 1878.

A FEW HINTS ON COLLECTING LARVÆ OF DARAPSA VERSICOLOR.

BY ROBERT BUNKER, ROCHESTER, N. Y.

For several years past I have searched carefully for larvæ of this species, only to be rewarded with damaged wardrobe and wet feet. This season I determined to try the plan of breaking off the button-bush branches and shaking them over paper spread on the ground. On my

first trial I secured one nearly full-grown larva of *versicolor*, and six half-grown larvæ of *promethea*. Unfortunately I was unable to visit the bushes again until it was too late. The advantages this method has over that of examining the bushes while standing are manifold. In the first place, four times as many branches can be examined in the same length of time. Secondly, not a larva, great or small, can escape observation. Last, and not least, eggs may be detected, because, as is well known, insects generally lay their eggs on the under side of the leaf or on the stem. Another advantage to the collector is that the wood of this shrub is very brittle, and fifty branches can be broken off in a few minutes.

I observed one characteristic not mentioned by Geo. D. Hulst in his description of *D. versicolor*. In moving from one branch to another it feels its way step by step, stretching out the thoracic part of its body three times its ordinary length, and then suddenly drawing back, repeating the same several times before venturing forward, reminding me strongly of the manœuvring of a large tropical basket-worm I once had the pleasure of rearing. As many of the branches of the button-bush hang directly over the water, the larva seems to know by instinct that a fall would be fatal, and no doubt (as Mr. H. Strecker has suggested) many of them are lost in this way.

A REMARKABLE ENTOMOLOGICAL COLLECTION.—Some details have reached us concerning a large collection in Entomology made by Henry Edwards, of San Francisco, during the last 25 years. Professor Davidson, President of the Academy of Sciences, states that this collection of insects is one of the largest ever made in the United States, and by far the most complete ever made on the Pacific coast. It consists of about 60,000 species, comprising more than 200,000 specimens. These include not only all the orders on the Pacific coast, but nearly or quite all in the United States, with a large representation of orders from all parts of the world. The collection is said to be really one of the most complete known in any country. It is valued at \$12,000, or rather, that is about the sum expended in freights, cabinets and the purchase of rare specimens. The labor of 25 years is not estimated.—*Times (London, Eng.)*

INSECTS OF THE NORTHERN PARTS OF BRITISH AMERICA.

COMPILED BY REV. C. J. S. BETHUNE, M. A.

From Kirby's Fauna Boreali-Americana : Insecta.

(Continued from Vol. x., p. 139.)

FAMILY ACANTHIADÆ.

389. ARADUS TUBERCULIFER Kirby.—Plate vi., fig. 5. Length of body $3\frac{3}{4}$ lines. A single specimen taken with preceding.

[279.] Body dull black, very flat. Head with the nose prominent and obtuse, and the front armed with a sharp tooth on each side; antennae black with the second joint rufous all but the tip; the last joint white at the tip; prothorax with a short anterior truncated lobe, widest in the middle where the sides form a rounded angle; emarginate posteriorly; edge very minutely serrulate; six longitudinal ridges occupy the disk of the thorax, the two external ones are abbreviated and rather obtuse; scutellum with a reflexed margin, and bearing on its disk a large subhemispherical tubercle; hemelytra reticulated with cinereous, especially the membrane; abdomen with a broad margin, and the last segment bilobed with incurved lobes.

This species appears to be related to *A. depressus* and *elevatus* Fabr., and to *A. quadrilineatus* of Say.

390. ARADUS AFFINIS Kirby.—Length of body $2\frac{1}{2}$ lines. Several taken with preceding.

Extremely similar to *A. tuberculifer*, but much smaller. Antennae entirely black; prothorax not extended anteriorly, so as to form a lobe; lateral abbreviated ridge more obtuse, resembling a tubercle; margin of the abdomen with a white point at the apex of each segment; anus not lobed.

FAMILY REDUVIADÆ.

[280.] 391. REDUVIOLUS INSCRIPTUS Kirby.—Plate vi., fig. 7.—Length of body 3 lines. A single specimen taken with preceding.

Body of a pale or yellowish white, lineari-oblong, widest posteriorly. Antennae shorter than the body, rufous, three last joints very slender;

head and prothorax streaked and dotted with black ; with the anterior lobe of the latter constricted next the head, separated from the posterior by an impressed sinuated black line ; scutellum black with two pale longitudinal elevations, thickest anteriorly ; hemelytra with the nervures whiter than the rest of their substance ; with three blackish discoidal dots arranged longitudinally from the middle to the membrane ; thighs dotted with black, the anterior pair being incrassated and thicker than the intermediate, and these than the posterior, which are not incrassated ; back of the abdomen black, with a white lateral margin, underneath with three longitudinal black stripes.

[281.] 392. *CHIROLEPTES RAPTOR Kirby*.—Length of body nearly 4 lines. Two specimens taken in the road from New York to Cumberland-House.

Body black and shining. Head subrhomboidal, connected with the prothorax by a long cylindrical and transversely wrinkled neck, which altogether gives the animal a serpentine aspect ; legs pale ; shoulders much incrassated, blackish at the tip, armed below with several strong spines ; cubits with a single intermediate one ; prothorax bell-shaped, black, dull from inconspicuous pubescence ; scutellum dull, white at the tip ; hemelytra dull from pubescence, blackish-brown, with paler lines which extend into the membrane ; lateral margin white ; abdomen black, with the ventral lateral margin white.

This species approaches very near to Say's *Reduvius raptorius*, but it is distinct.

[282.] 393. *NABICULA SUBCOLEOPTRATA Kirby*.—Length of body 4 lines. Taken with the preceding.

Body apterous, black, without any gloss. Head subtriangular, antennæ rufous ; thorax bilobed, first lobe thrice as long as the last, bell-shaped ; last a little wider than the first, flattish ; hemelytra a little shorter than the abdomen, brownish-black, punctured ; lateral margin obscurely rufous ; membrane scarcely differing in substance or colour from the rest of the hemelytrum ; legs rufous ? abdomen obtusangular underneath.

FAMILY HYDROMETRIDÆ.

394. *GERRIS RUFO-SCUTELLATA Latr.*—Length of body $6\frac{1}{3}$ lines. One specimen taken in Lat. 65° .

Body underneath black, covered with silver pile. Head brown-black, subpilose; two first joints of the promusci black and robust, the remainder rufous and more slender; antennae rufous with the last joint black; eyes large, subhemispherical, brown; prothorax dull-ferruginous, with the lateral margin, a dorsal subelevated line, and the scutellum, paler; legs rufous, pale at the base; hemelytra dull-ferruginous, with the lateral margin and nervures black; the bead that forms the lateral margin of the abdomen, and the two last segments, are rufous; the anal spines are very little shorter than the tail.

[283.] 395. *GERRIS LACUSTRIS* Linn.—There were three pupæ of this species taken, which do not appear to differ from the European specimens.

FAMILY CORIXIDÆ.

396. *CORIXA STRIATA* Linn.—Length of body $3-3\frac{1}{4}$ lines. Many specimens taken with the preceding.

Body yellowish, depressed, naked, smooth. Head inflexed, obtuse; eyes brownish, triangular; antennae inserted before the eyes under the lateral margin; scape incrassated; remaining joints together are setiform; prothorax subtriangular, with the hemelytra, brown, streaked transversely, with irregular yellow streaks; epipleura not streaked, pale-yellow; breast black, spotted with yellow on the sides; legs yellow; anterior and posterior tarsi natatory; the latter longer than the tibiae; abdomen with the first ventral segment, and an abbreviated basilar band of the second, black.

VARIETY B. With the first joint of the posterior tarsi black at the tip. This may be a distinct species; there were seven specimens distinguished by a black annulet surrounding the terminal half of the first dilated joint of the tarsus in question.

[284.] 397. *CORIXA CARINATA* Kirby.—Length of body 4 lines. Two specimens taken with preceding species.

Body yellow underneath, embrowned at the insertion of the legs. Head yellow; front broad and flat; labrum transversely tricarinate; occiput obtusangular; vertex with an obsolete longitudinal ridge issuing from the

angle of the occiput ; prothorax with a longitudinal intermediate ridge, transversely streaked with yellow and brownish black ; hemelytra sprinkled, and towards the base almost streaked, with black and yellow. In other respects this species resembles *C. striata*.

398. *CORIXA PLANIFRONS* Kirby.—Length of body 4 lines. Two specimens taken with the preceding.

This species differs from the preceding in having the under side of the body black, with two pale spots on each side of the breast, and the anal half of the abdomen pale-yellow. The head is yellow, the vertex is ridged longitudinally and separated from the front by a transverse curvilinear ridge ; and from which the anterior part of the face is inflexed, plane or slightly concave ; in other respects this species exhibits exactly the same characters with *C. carinata*. They may perhaps be sexual varieties.

[285.] FAMILY NOTONECTIDÆ.

399. *NOTONECTA INSULATA* Kirby.—Length of body $6\frac{2}{3}$ lines. A single specimen taken.

Body underneath black, above yellowish. Head yellowish, with a brownish longitudinal stripe between the eyes, which are reddish ; scutellum very black, velvety ; hemelytra with the lateral margin brown spotted with yellow ; the posterior half of the hemelytra is brown anteriorly, black-brown in the middle, fuliginous at the apex ; in this darkened portion anteriorly is a yellowish triangle connected with the last marginal spot, and posteriorly is a white kidney-shaped spot followed by the sooty apex ; breast very hairy with longish fuliginous hairs ; legs yellowish.

VII. HOMOPTERA.

FAMILY CERCOPIDÆ.

400. *CERCOPIS MARGINELLA* Fabr.—Length of body $3\frac{1}{4}$ lines. Taken with the preceding, and at Carlton-house in April.

Body black, dotted and inscribed with white. Hemelytra embrowned ; nervures black ; lateral margin sanguine ; margin of the abdomen edged with white.

[286.] VIII. LEPIDOPTERA.

FAMILY PAPILIONIDAE.

401. *PAPILIO TURNUS* Linn.—Taken in Canada by Dr. Bigsby. [It is, of course, quite unnecessary to repeat Kirby's description of this very familiar butterfly.]

[287.] 402. *COLIAS EDUSA* Fabr.—Several specimens from North America. [This species is, no doubt, *C. eurytheme* Boisd., which is quite common at Sault Ste. Marie and other localities in the North-west. For description and admirable figures see Edwards' "Butterflies of North America," vol. i., part iv.]

PERSONAL.—Our esteemed friend, J. Pettit, Esq., has removed from Grimsby, Ontario, to Buffalo, New York. Correspondents when writing him will please bear in mind this change of address.

CORRESPONDENCE.

A CHEAP ENTOMOLOGICAL CABINET.

DEAR SIR,—

I have recently been looking over the back volumes of the ENTOMOLOGIST, and have found them, as I do the later numbers, very interesting and instructive reading. Among other valuable items, I have noticed suggestions regarding the construction of cheap cases for holding specimens, and as the question of expense is always an important one, especially to young collectors, I will, if you can spare me space, briefly describe the style of cabinet I am now using, and which has been adopted by one of my friends.

Among the substitutes for cork mentioned by Packard (in his Guide to the Study of Insects) are thin frames covered on each side with paper

and fitted into the bottom of drawers in a cabinet. Now I have gone a step farther, and discarding the drawers entirely, have adopted the frames and adapted them to a cabinet without drawers. This cabinet can be made of any size and be divided by upright partitions to suit the taste of the owner, and the frames can run in grooves made in the sides and partitions before it is put together, or between movable strips tacked or screwed in afterward at suitable distances, say two inches. The one I now use (a small one made as an experiment) is three feet two inches wide inside, with two partitions, so that there are three spaces each one foot in width. It is fifteen inches deep and two feet high. Placing the frames two inches apart gives me twelve in each section, or thirty-six in all, and as each has a surface of twelve by fifteen inches, I have an aggregate expanse of thirty-six square feet. The advantages claimed for this cabinet are its lesser weight and expense. It is easily handled and can stand pretty-rough usage without fear of damaging specimens, as the pins are firmly held, and the frames, running in grooves or between strips, cannot stir when the door shuts close against them. It does away with the expense of drawers, the cork alone for which (thirty-six feet at 18 cents per foot) would be \$6.48. The frames constructed of thin stuff (say quarter-inch) cost at the most five cents each, and suitable stiff cartridge paper is very cheap. If the frames are made slightly smaller than those mentioned, one sheet will cover both sides of two frames. The paper is put on when damp, but should not be too wet. The frames can be easily re-papered if needful, and if the sections are made of equal width, they will all be interchangeable, which will be found a great convenience.

This manner of keeping specimens will, I think, be particularly useful to collectors of Coleoptera. I send this, feeling that each member of the Society should contribute his mite of experience and knowledge for the benefit of his fellow-workers.

W. H. HARRINGTON, Ottawa, Ont.

THE TOMATO-WORM (*Sphinx quinque-maculata*).

DEAR SIR,—

This insect has been extraordinarily abundant this year in the neighborhood of Port Hope, so much so that many persons had to take vigorous

measures for the preservation of their crop. On the few plants in my own garden scores of the larvæ were found. A market-gardener who lives close by me—Mr. Wm. Eddie—informs me that on one day during the summer he and his assistants together gathered *four bushels* of the “worms” off an acre and a quarter of tomatoes! During many days following they seemed almost as numerous as ever, in spite of continuous hand-picking. Yesterday (Oct. 18) Mr. Eddie brought me a newly escaped imago. Is not this autumnal appearance most unusual? I suppose that it may be attributed to the long continuance of warm weather; up to to-day nothing has yet been touched by frost in my garden.

C. J. S. BETHUNE, Port Hope, Ont.

ON *L. LUCIA* AND *PSEUDARGIOLUS*.

DEAR SIR,—

In the absence of all knowledge of the preparatory stages of *Lycaena Lucia*, the date of the first appearance of this species and *L. pseudargiolus* var. *neglecta*, at this place the present season, are not favorable to Mr. Edwards' view of their being one and the same thing. One male example of *Lucia* was found on April 4th. On the 8th several appeared, two males taken. On the 12th males common, one female taken. On the 19th several pairs taken copulating; many observed. A male *neglecta* taken, apparently just emerged. On 22nd both sexes of *Lucia* common; males worn; several male *neglectas* abroad. On April 30th and May 4th females of *Lucia* observed depositing eggs on flower buds of *Cornus Florida*. May 9th, female *neglectas* abroad, both sexes of which have been observed up to July 10th. The last *Lucia* was observed May 9th. The above observations were carefully and conscientiously made. If, in the end, it shall be proved that *Lucia* is an early spring form of *pseudargiolus*, the above is almost conclusive evidence that deep coloration is not wholly the result of frigid weather.

NOTE.—It is with trepid hand that I pen the fact that two species of *Rhopalocera*, believed by some of our boreal friends to exist no where in this State outside of famous Center—*N. canthus* and *A. vialis*—are frequently met with in this section.

E. C. HOWE, M. D., Yonkers, N. Y.

DEAR SIR,—

The cutting sound heard by Dr. Packard, and discovered to be two black points used by the insect to cut its way out of prison, is not confined to *Luna*. I have heard the same sound when *Polyphemus* was about to leave its wintry mansion, but supposed it was done by the moth working its feet against the softened part of the cocoon. The feet and legs seem as strong when the insect first emerges as they do any time afterwards; indeed it is surprising, after the exhaustive effort the insect must have made to get through the tough cocoon, to see how readily it crawls up to a convenient place for its ample wings to spread into shape and beauty. As all breeders of moths are aware, the wings, when the moth first comes out, are soft and weak, and are the last parts we should suppose would assist in the arduous task.

On two occasions I have heard a sharp report when *Cecropia* was about to make its exit from the cocoon. The sound was similar to that produced by toy torpedoes such as boys amuse themselves with. I have thought perhaps the corrosive liquid used by the moth to soften the silk might be of an explosive nature, and on coming in contact with the oxygen of the air, might produce the sound. I should like to know if any of the readers of the CAN. ENT. have heard this remarkable sound, and what their opinions are.

ROBERT BUNKER, Rochester, N. Y.

DEAR SIR,—

Saperda candida Fab. made their appearance this year about twenty days earlier than usual. Trees leafed out in this vicinity about thirty days earlier than in ordinary seasons. Took June 2nd, 3 ♂ and 1 ♀.

June 6th, I took one pair of *Saperda puncticollis* Say on poison ivy (*Rhus toxicodendron* L.)—the first of these handsome *Saperdas* taken in this locality.

June 12th, took the first *Saperda Fayi* Bland. This borer attacks the limbs and stem ($\frac{1}{2}$ to $1\frac{1}{2}$ inches in diameter) of our wild thorn (*Crataegus crus-galli* L. and *C. tomentosa* L.), creating a gall-like, gnarly swelling, weakening the branch so that it sometimes breaks off by the wind, and often killing it. The beetle cuts its way out from one to three inches above or below the swelling. In 1876 I took a ♀ *S. Fayi* Aug. 15th.

CHAS. D. ZIMMERMAN, Buffalo, N. Y.

